# SMALL ARMS TRAINING

## KNOW YOUR TARGET

*The Thales Sagittarius small arms training system is one of the world's most popular. The German Armed Forces operate the system at 160 sites, one such site is shown here.*

(Source: Thales Training)

**MT&SN's Grant McDonald takes a panoramic view at the small arms training market.**

Training at skill at arms is one of the basic soldiering skills that must be accomplished by all military personnel. Controlling the weapon at all times is of paramount importance, any weaknesses are magnified tenfold in operational situations. Drilling in procedures is a key stage. The ability to shoot accurately is not enough, troops must learn techniques such as how to put down fire as a section.

In today's combat zones, a young soldier is often faced with a shoot/don't shoot situation as given the nature of a counter-insurgency campaign, the enemy tends not to make things easy and blends in with the local civilians until the last moment. From basic marksman skills, to fire team drills and judgemental training, the modern array of small arms trainers, that rely on advanced simulation technologies, can deliver the training required to operate effectively.

Thales is one main supplier with its Sagittarius small arms training system. The German Armed Forces operate the system at 160 sites, with other customers including the Royal Netherlands Army, Japanese Defence Forces, Irish Defence Forces and Botswana. Sagittarius is available as a video-based training system and uses standard video, DVD, and MPEG formats to deliver scenarios across two to ten lanes.

The second type uses ThalesView, the company's Image Generator, to deliver instructor-developed scenarios that take advantage of 3D terrain in order to provide more realism. Lanes can be connected for section/squad training, as well as networked to other systems via DIS/HLA architectures. Another supplier in Europe is Gavap which has delivered 43 SITTAL small arms training systems for the French Army, s even for the French Air Force and one for the French Navy.

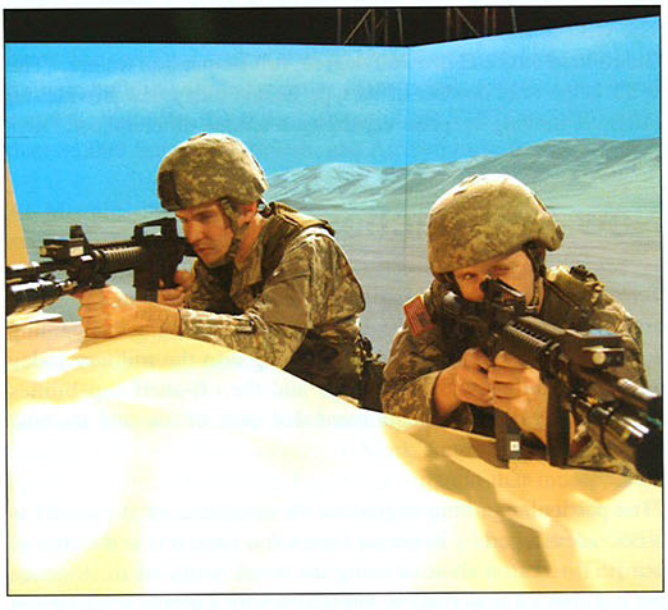
Globally, one of the largest suppliers is FATS, which was recently acquired by Meggitt Defence and is now part of Meggitt Training Systems. One reason for this strategic move is that FATS has a very tight grip on the current worldwide small arms simulator market, having delivered well in excess of 4,000 small arms training systems to US and foreign customers.

One of the company's high-profile programmes outside the US is the UK Dismounted Close Combat Trainer (DCCT), which the company is on course to complete $9.2 million in upgrades for later this year. The company has integrated the Saab New Light Anti-Tank Weapon (NLAW) into DCCT, among other weapons.

FATS began supplying DCCT to British military forces in 2001, which are used to train multiple soldiers at the same time using computer generated imaging and digital video technology in weapons such as the SA-80 A2 assault rifle. DCCT supports basic to advanced marksmanship, use of force judgment, shoot/don't shoot decision-making and small unit tactical training. *MT&SN* saw first hand in Wellington Barracks in London the effectiveness of the system, particularly the judgemental mode when dealing with armed personnel in plainclothes who may or may not be terrorists.

The company says that its current customers form the base of its business through upgrades to existing systems, new weapons added to existing systems such as Opposition Force (OPFOR) weapons, long term Contractor Logistic Support (CLS) programmes. Importantly, says company spokesman Vince Greiner, "providing our customer base with new geo-specific terrains to meet their current day training needs is a major task. Realistic training on a simulator saves time, money and most importantly lives."

"We are offering "turn key" solutions to our customer base," says Greiner, which is an important growth area for Meggitt Training Systems. The company says it is providing hardware/software and CLS with programmed system upgrades. The benefit of CLS is that it allows the trainers to focus on training as opposed to operating a simulator, something which Meggitt says is working very well in Australia, and in the United Arab Emirates (UAE).



*Cubic Defense is the prime contractor for the US Engagement Skills Trainer (EST).*

(Source: Cubic Defense)

*Meggitt Defence now owns the FATS company which had built up the world's larget customer base of any SAT company. Shown here is one of the company's convoy trainers.*

(Source: Meggitt Defence)

Meggitt has also sought to innovate and the current principle example is its BlueFire wireless weapons technology, for which it has acquired six patents. "Any company wanting to use radio frequency in its weapons simulators may have to license the technology from Meggitt," says the company in a statement. Filing the patents could be a shrewd move given a tetherless weapon is much more realistic but other companies are likely to study ways round the patents first if they are seeking to use wireless technologies rather than pay money to Meggitt.

To date, approximately 2,000 BlueFire weapons have been sold which still provide instructors with, "important weapon handling diagnostics and all the feedback features of system controlled weapons." These weapons are compatible with other FATS system controlled weapons simulators and do not require any system modifications. BlueFire weapons currently available include, Taser M26, OC Spray, Taser X26, Glock 17, Glock 19, Sig 226, M9, M4, M16, Sig 229DAK, H&K G36E and Walther P99QA.

Meggitt also produces InSTEP-Military, which is, "rugged, portable and easy to use" and provides for a marksmanship and judgemental training, as well as mission rehearsal, supporting up to 15 firing lanes, depending on which configuration is

*Since the allied involvement in Iraq and Afghanistan, the market has burgeoned with convoy training systems which has been good news for the likes of Meggitt, Cubic , Lockheed Martin and Raydon Corporation.*

(Source: Cubic Defense)

purchased. Instructors receive feedback on a number of parameters on how students employ the weapon such as cant angle, trigger squeeze and butt pressure.

One of Meggitt's main competitors is Cubic. "Our flagship product is called the EST +, and we also have the EST 2000 and Warrior Skills Trainer (WST)," says Mark Saturne, Director of Business Development for Cubic Simulation Systems Division.

In terms of budgets, "customers need to make best use of their training dollars and at a time when many are budget constrained, the EST and WST product line has an incredible ROI. Annually, through the use of EST 2000, the US Army saves $32 million a year in 5.56mm ammunition alone, and they don't have to fire on the range, thereby reducing costs still further.Trainees at all five basic US Army training installations train on the EST 2000 before they even put their hands on a weapon and go down the range and start firing. We can greatly increase their first-time qualification rate and again the cost savings are very significant."

"EST + adds a moving eye point capability to the core marksmanship, judgemental use of force and collective training capabilities of the EST 2000." The WST provides for collective training for combat convoy operations as well as offensive small fire team training. "We have incorporated tetherless weapons into our virtual trainers [that] improves the overall training so you're not tied to an air compressor cord."

"The key difference is that the EST + and WST allow for offensive training, adding a moving eyepoint capability, more than just shoot at a target, you can walk through a scenario and encounter forces in a continually changing environment, which can also include Improvised Explosive Devices (IED)," says Saturne.

"We've been able to build upon our EST 2000 platform to again add an offensive capability as well as integrate other training requirements such as call for fire training, to incorporate all the required communications, as well as the ability in the WST to create different types of vehicles that soldiers operate."

The WST is fielded at several US Army, USAF and US National Guard locations and is a 360 degree, full immersion trainer. "The WST is the only product of its type fielded today that provides an offensive moving eyepoint capability, a unique differentiator," says Saturne.

## New Approaches

Technology in gaming engines is pushing trends in the small arms training market. "We have to keep up with the gaming engines in the market. Soldiers coming into the military today are very familiar with the games and the off-shelf capabilities they bring. Military leaders want that ease of use and training fidelity in their systems"

"The particular gaming engine we've integrated most recently is VBS2 [developed by Bohemia Interactive] and it is at the core of our EST +. I stop short of using the word Artificial Intelligence but it allows for very realistic interaction with a hostile environment and between entities, actual enemy combatants," says Saturne.

Laser Shot is a relatively new company on the scene and is already making inroads. Its Military Skills Engagement Trainer 6000 three screen system is being used by the US Navy Riverine

Squadron for pre-deployment and mission rehearsal training. The screens can be used separately or linked to create a 105 degree Field of View. The company has also delivered to Naval Special Warfare Group One a live-fire capable system that includes a laser-based system for initial training, in addition to numerous other contacts for the US Armed Services.

In terms of market demand, Cubic implies the US Army's mandated use of EST 2000 makes a significant contribution to export sales. The company is also offering to upgrade all fielded EST 2000s operated by the US Army.

For the US Marine Corps, Lockheed Martin was contracted last year to supply Combat Convoy Simulators (CSS), which provide mission rehearsal training, building on small arms skills where students are confronted by tactical scenarios.

Jim Craig is Vice President of Ground, Maritime & Civil Solutions, Lockheed Martin Simulation, Training & Support. "We have transformed our proven technology in an evolutionary way that meets the most urgent needs of the Warfighter Convoy operations are highly targeted by insurgents and continue to be a leading cause of casualties," says Craig.

During each training mission, the vehicle commander and a crew of up to five students are presented with realistic terrain and threat environments and one or more training scenarios such as re-supply, patrol, logistics support, high-value target extraction, medical evacuation, call for close air support and call for fire. Each training mission focuses on defending against current and evolving threats.

CCS builds on technology developed for the Virtual Combat Convoy Trainer (VCCT) for the US Army, US Air Force and USMC as well as the Army's Close Combat Tactical Trainer - Reconfigurable Vehicle Simulator (CCTT RVS). CCS improves the virtual environment, weapons and integration. For example: Visual fidelity is dramatically improved by incorporating a modern, multi-threaded visual gaming image generator to provide textured, high-resolution, realistic detail.

The simulator's weapons supplied by Meggitt are wireless and no longer tethered, providing students more freedom to move around the vehicle and providing a more realistic weapon response and recoil. Six simulator student stations are housed in adjacent rooms in a single building allowing entire units to train together in virtual convoys. Since the initial deployment of the VCCT in 2004, more than 85,000 Soldiers, Marines, and Airmen have been trained.

At Meggitt, the company sees, "growth potential in virtually every part of the world in both Military and Law Enforcement...but constraints are budgets, [and the challenge is] having to constantly monitor where the money is, where it is in the process of each customers/country's budget [and] timing the marketing in that region to match their budget schedule."

One solution that Cubic is advocating is developing customer training centres. The company's Mark Saturne explains. "We have established a training facility in Orlando that incorporates our latest products that we allow local law enforcement agencies to come in and use on a fee per use basis, sometimes the local agencies don't have the dollars to make that kind of capital investment in a system such as WST so we now provide a facility so that they can use their training dollars efficiently."

When asked if this business model was going to be rolled out across the US, Saturne was more tight lipped but did say, "we're evaluating that for the future based on our success in Orlando."

*The role of the small arms trainer is to prepare soldiers for field deployment.*
(Source: EADS )

But he did agree given the size of the US law enforcement community at all levels, the market potential was high.

Meggitt also has its training centres too, while Finnish company Noptel is finding increased demand for its marksman training programmes for its ST-2000 Pistol and ST-2000 Marksman systems. The Noptel Marksman can be used as a basic training unit by individual shooter or by an instructor controlled group of shooters. The Marksman is quick to set up, since it has only a few main parts: the Optical Unit, the Recoil System-box and the PC.

Noptel's Marketing Director is Matti Tervaskanto. "Our system his very easy to use, so you don't need a computer specialist. You can connect the units easily to any computer, normal ports, and everything in the computer is made automatically so the user doesn't have to define in basic and normal training anything. You can take the system out of the package and in five minutes you're ready to train," explains Tervaskanto. "There is now more demand not just for training systems, but a complete programme that includes, basic, to range training that we are asked to provide for the trainers," says Tervaskanto.

Noptel's customers are in 60 countries and it is currently active in Gulf countries, Asia, Africa and the US too, where it is co-operating with a US company on market opportunities there but refused to disclose with whom. "We have a large variety of customers, but the military sector is the biggest. Our customers are quite traditional. They don't necessarily want new things or features, just easy to use or reliable training systems they can use on a daily basis," says Tervaskanto.

In conclusion, the small arms training market has some varied opportunities, some of which could be very lucrative indeed. A trend to linking up existing trainers for networked training as a squad, or bringing a convoy training scenario together can only benefit, as while there are things that only live fire training can teach, some scenarios can only be taught in simulation exercises before they are encountered for real. The concept of a skill at arms training centre operated by industry, perhaps staffed by former law enforcement or military personnel, should prove attractive to civil, and maybe even some military organisations, that require an excellent foundation in shooting skills. No one can ever prepare 100% for what they might encounter on patrol on operations, but practice using the best training equipment available, can only be a step in the right direction.